REMARKS

This Substitute Amendment supersedes the Amendment dated August 15, 2006, and is intended to remedy the alleged deficiencies noted in the Notice Of Non-Responsive Amendment dated November 2, 2006.

This application has been carefully reviewed in light of the Office Action dated May 22, 2006. Claims 1 to 8, 10 to 16, 19, 21 to 24, and 26 to 46 have been cancelled, without prejudice or disclaimer of subject matter, and claims 47 to 58 have been newly added herein. Claims 9, 17, 18, 20, 25, and 47 to 58 remain in the application, of which claims 9, 17, 20 and 25 have been amended, and claims 47, 49, 51, 53, and 55 to 58 are the independent claims. Reconsideration and further examination are respectfully requested.

Initially, the Applicants' undersigned representative thanks Examiner Ahn and Primary Examiner Pham for the thoughtful courtesies and kind treatment afforded during the personal interview conducted on November 14, 2006. In the interview, the Examiner agreed that, if the substance of original independent claim 1 were included in the new claims, the new claims would be acceptable for examination, effectively overcoming the objections noted in the Notice Of Non-Responsive Amendment. Having incorporated the features of building at least a first result set into independent claims 47, 49, 51, 53, and 55 to 58, Applicants assert that the objections raised in the Notice Of Non-Responsive Amendment have been overcome.

Claims 9, 17, 20 and 25 have been amended herein for readability, and to correct claim dependencies. Since the substance of newly-added claims 47 to 58 is found throughout the disclosure, including pages 15 to 21 of the specification, and Figures 10, 16, 20 and 24, the applicants maintain that no new matter has been added.

In the Office Action, claims 1 to 8, 10, 11, 17 to 19, 24 to 30, 33 to 35, 37 to 40, and 43 to 45 were rejected under 35 U.S.C. § 102(b) over U.S. Patent No. 6,829,695 ("Ross"); claims 9, 31 and 41 were rejected under 35 U.S.C. § 103(a) over Ross in view of U.S. Patent No. 5,715,413 ("Ishai"); claims 12 to 16 were rejected under 35 U.S.C. § 103(a) over Ross in view of U.S. Patent No. 5,471,611 ("McGregor"); claims 20 to 23, 36 and 46 were rejected under 35 U.S.C. § 103(a) over Ross in view of T. Haerder et al, "Datenbanksysteme" 1999, Springer, Heidelberg, pp. 207-10, 227-33, figs. 7.15, 8.1, and 8.2.B ("Rahm"); and claims 32 and 42 were rejected under 35 U.S.C. § 103(a) over Ross and Ishai, and further in view of Rahm. As noted above, claims 1 to 8, 10 to 16, 19, 21 to 24, and 26 to 46 have been cancelled herein, without prejudice or disclaimer of subject matter, and without conceding the correctness of the associated rejections. In light of the newly added independent claims, withdrawal of the § 102 and § 103 rejections and further examination are respectfully requested.

According to one implementation, the present disclosure relates to the performance of a logical OR operation. First and second result sets are built by identifying data records including first and second attributes from amongst first and second attribute sets stored in first and second tree structures, respectively, assigning guide elements of the first result set to identified data records, and assigning guide elements of the second result set to identified data records, where the first result set includes fewer guide elements than the second result set. The first result set is selected, and it is iteratively checked to determine whether each of the guide elements of the first result set also exists in the second result set. At least one of the guide elements of the first result set is renamed if the at least one of the guide elements of the first result set does not exist in the second result set and the at least one of the guide elements of the first result set is deleted if the at least one of the guide elements of the first result set exists in the second result set. The renamed at least one of the guide elements of the first result set is linked with the guide elements of the second result set, as the final result set, and the final result set is output.

Referring to particular claim language, independent claim 47 recites a method for performing a logical OR operation. The method includes building first and second result sets, where building the first and second result sets further includes identifying data records including first and second attributes from amongst first and second attribute sets stored in first and second tree structures, respectively, assigning guide elements of the first result set to identified data records, and assigning guide elements of the second result set to identified data records, where the first result set includes fewer guide elements than the second result set. The method also includes selecting the first result set, iteratively checking whether each of the guide elements of the first result set also exists in the second result set, and renaming at least one of the guide elements of the first result set if the at least one of the guide elements of the first result set does not exist in the second result set. Furthermore, the method includes deleting the at least one of the guide elements of the first result set if the at least one of the guide elements of the first result set exists in the second result set, linking the renamed at least one of the guide elements of the first result set with the guide elements of the second result set, as the final result set; and outputting the final result set.

Independent claim 54 recites a computer program product substantially corresponding to method claim 47.

The applied art is not seen to disclose, teach, or to suggest the foregoing features recited by independent claims 47 and 55. In particular, Ross is not seen to disclose at least the features that: *i)* whether each of the guide elements of the first result set also exists in the second result set is iteratively checked, where *ii)* at least one of the guide elements of the first result set is renamed if the at least one of the guide elements of the first result set does not exist in the second result set, and where *iii)* the at least one of the guide elements of the first result set are deleted if the at least one of the guide elements of the first result set exists in the second result set, and *iv)* the renamed at least one of the guide elements of the first result set are linked with the guide elements of the second result set, as the final result set.

Ross discloses a relational processor, in which node threads are combined with each other by traversing down a tree from the top node. *See* Ross, col. 6, ll. 15 to 17, and 30 to 32; and *Abstract*. In particular, a logical AND operation occurs by converting a record index of a thread to a bit position in a contiguous binary data stream for each thread using a mapping function of a record location to a bit location. *See* Ross, col. 6, ll. 32 to 38. A client which receives the collection may request of a server only those records meeting desired search criteria. *See* Ross, col. 6, ll. 41 to 44. While it is true that Ross, as well as many other of the disclosed references, describes providing a wide variety of Boolean logical functions, the approach outlined by Ross is not seen to parallel the approaches described by the present disclosure. For instance, Ross is not seen to provide for performing logical operations using at least one result set, where each result set further includes guide elements each associated with a record. From this point of departure, Ross cannot be seen to teach or suggest the other associated features described by the independent claims.

For these and other reasons, the applicants respectfully assert that Ross is not seen to disclose, nor does the Office Action even allege that Ross discloses, at least the features that: *i)* whether each of the guide elements of the first result set also exists in the second result set is iteratively checked, where *ii)* at least one of the guide elements of the first result set is renamed if the at least one of the guide elements of the first result set does not exist in the second result set, and where *iii)* the at least one of the guide elements of the first result set are deleted if the at least one of the guide elements of the first result set exists in the second result set, and where *iv)* the renamed at least one of the guide elements of the first result set are linked with the guide elements of the second result set, as the final result set.

According to another arrangement, the present disclosure relates to the performance of a logical AND operation. A result set is built by identifying data records including a first attribute from amongst a first attribute set stored in a first tree structures, and assigning guide elements of the result set to the identified data records. Each of the guide elements are iteratively selected, and the record associated with each of the guide elements is checked based upon a second attribute. At least one of the guide elements is deleted if the second attribute is not met by the at least one of the guide elements, a predecessor of a deleted at least one of the guide elements is linked with a successor of the deleted at least one of the guide elements, and the result set is output as the final result set.

Referring to particular claim language, independent claim 49 recites a method for performing a logical AND operation. The method includes building a result set by identifying data records including a first attribute from amongst a first attribute set stored in a first tree structures, and assigning guide elements of the result set to the identified data records. The method also includes iteratively selecting each of the guide elements, checking the record associated with each of the guide elements based upon a second attribute, and deleting at least one of the guide elements if the second attribute is not met by the at least one of the guide elements. The method also includes linking a predecessor of a deleted at least one of the guide elements with a successor of the deleted at least one of the guide elements, and outputting the result set as the final result set.

Independent claim 56 recites a computer program product substantially corresponding to method claim 49

The applied art is not seen to disclose, teach, or to suggest the foregoing features of independent claims 49 and 56. In particular, and for the reasons stated above with regard to independent claims 47 and 55, and for other reasons, Ross is not seen to disclose, nor does the Office Action even allege that Ross discloses, at least the features that: *i)* the record associated with each of the guide elements is checked based upon a second condition, *ii)* at least one of the guide elements are deleted if the second condition is not met by the at least one of the guide elements, and *iii)* a predecessor of a deleted at least one of the guide elements is linked with a successor of the deleted at least one of the guide elements.

According to another arrangement, the present disclosure also relates to performing a logical AND operation. First and second result sets are built by identifying data records including first and second attributes from amongst first and second attribute sets stored in first and second tree structures, respectively, assigning guide elements of the first result set to identified data records, and assigning guide elements of the second result set to identified data records, where the first result set includes fewer guide elements than the second result set. The first result set is selected, and whether each of the guide elements of the first result set also exists in the second result set is iteratively checked. At least one of the guide elements of the first result set is deleted if the at least one of the guide elements of the first result set does not exist in the second result set, a predecessor of a deleted at least one of the guide elements is linked with a successor of the deleted at least one of the guide elements; and the first result set is output as the final result set.

Referring to particular claim language, independent claim 51 recites a method for performing a logical AND operation. The method includes building first and second result sets by identifying data records including first and second attributes from amongst first and second attribute sets stored in first and second tree structures, respectively, assigning guide elements of the first result set to identified data records, and assigning guide elements of the second result set to identified data records, where the first result set includes fewer guide elements than the second result set. The method also includes selecting the first result set, and iteratively checking whether each of the guide elements of the first result set also exists in the second result set. Furthermore, the method also includes deleting at least one of the guide elements of the first result set if the at least one of the guide elements of the first result set does not exist in the second result set, linking a predecessor of a deleted at least one of the guide elements with a successor of the deleted at least one of the guide elements, and outputting the first result set as the final result set.

Independent claim 57 recites a computer program product substantially corresponding to method claim 51.

The applied art is not seen to disclose, teach, or to suggest the foregoing features of independent claims 51 and 57. In particular, and for the reasons stated above with regard to independent claims 47 and 55, and for other reasons, Ross is not seen to disclose, nor does the Office Action even allege that Ross discloses, at least the features that: *i)* whether each of the guide elements of the first result set also exists in the second result set is iteratively checked, where *ii)* at least one of the guide elements of the first result set is deleted if the at least one of the guide elements of the first result set does not exist in the second result set, and where *iii)* a predecessor of a deleted at least one of the guide elements is linked with a successor of the deleted at least one of the guide elements.

According to another arrangement, the present disclosure relates to performing a logical NOT operation. A result set is built by identifying data records including a first attribute from amongst a first attribute set stored in a first tree structures, and assigning guide elements of the result set to the identified data records. Each of the data records are iteratively checked for a guide element of the first result set associated with the each of the data records, and a guide element in a second result set is instantiated associated with each of the data records not associated with a guide element of the first result set. Guide elements of the second result set are linked, the first result set is deleted, the second result set is output as the final result set.

Referring to particular claim language, independent claim 53 recites a method for performing a logical NOT operation. The method includes building a result set by identifying data records including a first attribute from amongst a first attribute set stored in a first tree structures, and assigning guide elements of the result set to the identified data records. The method further includes iteratively checking each of the data records for a guide element of the first result set associated with the each of the data records, and instantiating a guide element in a second result set associated with each of the data records not associated with a guide element of the first result set. Moreover, the method also includes linking guide elements of the second result set, deleting the first result set, and outputting the second result set as the final result set.

Independent claim 58 recites a computer program product substantially corresponding to method claim 53.

The applied art is not seen to disclose, teach, or to suggest the foregoing features of independent claims 53 and 58. In particular, and for the reasons stated above with regard to independent claims 47 and 55, and for other reasons, Ross is not seen to disclose, nor does the Office Action even allege that Ross discloses, at least the features that: *i)* each of the data records is iteratively checked for a guide element of the first result set associated with the each of the data records, *ii)* a guide element in a second result set associated with each of the data records not associated with a guide element of the first result set is instantiated, and *iii)* guide elements of the second result set are linked.

Accordingly, independent claims 47, 49, 51, and 53 to 58 are believed to be allowable over the applied combination of references. The other remaining rejected claims in the application are each dependent from the independent claims and are thus believed to be allowable over the applied references for at least the same reasons. Because each dependent claim is deemed to define additional aspects of the invention, however, the individual consideration of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, it is believed that the entire application is in condition for allowance, and such action is respectfully requested at the Examiner's earliest convenience.

The fees in the amount of $1,000 for the excess claims are being paid concurrently herewith on the Electronic Filing System (EFS) by way of Deposit Account authorization. Please apply any other charges or credits to Deposit Account No. 06 1050.

Respectfully submitted,

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